

Claims

- [c1] A composition comprising a two component polyurethane composition comprising a first component comprising a polyisocyanate and a second component comprising a polyol, wherein at least one of the first component and the second component further comprise a solvent; a phosphoric acid; and a phosphate ester of the formula $(OM)_{3-n}P(O)(OR)_n$, wherein n is 1 or 2, R is an organofunctional group, and M is hydrogen, metal, or ammonium.
- [c2] The composition of claim 1 further comprising an epoxy resin.
- [c3] The composition of claim 1 further comprising an epoxy resin in an amount ranging from about 0.8% to about 15% based on a total solids weight of the composition.
- [c4] The composition of claim 1, wherein the phosphate ester is added in an amount ranging from about 0.1% to about 5% based on a total solids weight of the composition, the phosphoric acid is added in an amount ranging from about 0.1% to about 4% based on a total solids weight of the composition.
- [c5] The composition of claim 1, wherein the solvent is non chemically reactive with isocyanates and is able to solubilize phosphoric acid.
- [c6] The composition of claim 1, wherein the solvent comprises at least one of a ketone and propylene glycol monomethyl ether acetate.
- [c7] The composition of claim 1, wherein the solvent comprises acetone and methyl ethyl ketone.
- [c8] The composition of claim 1, wherein the solvent comprises acetone and methyl ethyl ketone, and wherein the amount of acetone ranges from about 30% to less than 100% by weight of the solvent.
- [c9] The composition of claims 1, wherein the solvent further comprises water.
- [c10] The composition of claim 1, wherein R is at least one of a saturated C_5-C_{40} aliphatic group; an unsaturated C_5-C_{40} aliphatic group; a substituted, saturated C_5-C_{40} aliphatic group; and a substituted, unsaturated C_5-C_{40}

aliphatic group; wherein the substituting group substitutes at least one of the aliphatic carbon atoms, and wherein the substituting group is at least one of i) a halogen atom; ii) a C_1-C_6 alkyl group; iii) a C_1-C_6 alkoxy group; iv) a C_6-C_{10} aromatic hydrocarbon group; and v) a C_6-C_{10} aromatic hydrocarbon group that is substituted with at least one of a C_1-C_6 alkyl group and $-COOR^1$ group, wherein R^1 is at least one of H, metal, ammonium, C_1-C_6 alkyl, and C_6-C_{10} aryl.

- [c11] The composition of claim 1, wherein the composition is a coatings primer composition.
- [c12] A method comprising applying the composition of claim 1 to a substrate and forming a coating on the substrate.
- [c13] A method for making the composition of claim 1 comprising: providing the two component polyurethane composition; and adding the composition comprising the adhesion promoter in the solvent to at least one of the first component and the second component to form a coating composition.
- [c14] The method of claim 13 further comprising adding an epoxy resin to at least one of the first component and the second component.
- [c15] The method of claim 13 further comprising adding an epoxy resin to at least one of the first component and the second component in an amount ranging from about 0.8% to about 20% based on a total solids weight of the coating composition.
- [c16] The method of claim 13, wherein the phosphate ester is added in an amount ranging from about 0.1% to about 5% based on a total solids weight of the coating composition, the phosphoric acid is added in an amount ranging from about 0.1% to about 4% based on a total solids weight of the coating composition.
- [c17] The method of claim 13, wherein the solvent is non chemically reactive with isocyanates and is able to solubilize phosphoric acid.
- [c18] The method of claim 13, wherein the solvent comprises at least one of a ketone

and propylene glycol monomethyl ether acetate.

- [c19] The method of claim 13, wherein the solvent comprises acetone and methyl ethyl ketone.
- [c20] The method of claim 13, wherein the solvent comprises acetone and methyl ethyl ketone, and wherein the amount of acetone ranges from about 30% to less than 100% by weight of the solvent.
- [c21] The method of claim 13, wherein the solvent further comprises water.
- [c22] The method of claim 13, wherein R is at least one of a saturated C_5-C_{40} aliphatic group; an unsaturated C_5-C_{40} aliphatic group; a substituted, saturated C_5-C_{40} aliphatic group; and a substituted, unsaturated C_5-C_{40} aliphatic group; wherein the substituting group substitutes at least one of the aliphatic carbon atoms, and wherein the substituting group is at least one of i) a halogen atom; ii) a C_1-C_6 alkyl group; iii) a C_1-C_6 alkoxy group; iv) a C_6-C_{10} aromatic hydrocarbon group; and v) a C_6-C_{10} aromatic hydrocarbon group that is substituted with at least one of a C_1-C_6 alkyl group and $-COOR^1$ group, wherein R^1 is at least one of H, metal, ammonium, C_1-C_6 alkyl, and C_6-C_{10} aryl.
- [c23] The method of claim 13 further comprising applying the coating composition to a substrate and forming a coating on the substrate.
- [c24] The method of claim 13, wherein the coating composition is a coatings primer.
- [c25] A composition comprising a two component polyurethane composition comprising a first component comprising a polyisocyanate and a second component comprising a polyol, wherein at least one of the first component and the second component further comprise a solvent, a phosphoric acid, and an epoxy resin.
- [c26] The composition of claim 25, wherein the phosphoric acid is present in the composition in an amount ranging from about 0.1% to about 4% based on the total solids weight of the composition.

- [c27] The composition of claim 25, wherein the epoxy resin is present in an amount ranging from about 0.8% to about 15.0% based on the total solids weight of the composition.
- [c28] The composition of claim 25, wherein the solvent is non chemically reactive with isocyanates and is able to solubilize phosphoric acid.
- [c29] The composition of claim 25, wherein the solvent comprises at least one of a ketone and propylene glycol monomethyl ether acetate.
- [c30] The composition of claim 25, wherein the solvent comprises acetone and methyl ethyl ketone.
- [c31] The composition of claim 25, wherein the solvent comprises acetone and methyl ethyl ketone, and wherein the amount of acetone ranges from about 30% to less than 100% by weight of the solvent.
- [c32] The composition of claim 25, wherein the solvent further comprises water.
- [c33] The composition of claim 25, wherein the composition is a coatings primer composition.
- [c34] A method comprising applying the composition of claim 25 to a substrate and forming a coating on the substrate.
- [c35] A method for making the composition of claim 25 comprising: providing the two component polyurethane composition; and adding the composition comprising the solvent, the phosphoric acid, and the epoxy resin to at least one of the first component and the second component to form a coating composition.
- [c36] The method of claim 35, wherein the phosphoric acid is present in the composition in an amount ranging from about 0.1% to about 4% based on the total solids weight of the composition.
- [c37] The method of claim 35, wherein the epoxy resin is present in an amount ranging from about 0.8% to about 15.0% based on the total solids weight of the composition.

- [c38] The method of claim 35, wherein the solvent is non chemically reactive with isocyanates and is able to solubilize phosphoric acid.
- [c39] The method of claim 35, wherein the solvent comprises at least one of a ketone and propylene glycol monomethyl ether acetate.
- [c40] The method of claim 35, wherein the solvent comprises acetone and methyl ethyl ketone.
- [c41] The method of claim 35, wherein the solvent comprises acetone and methyl ethyl ketone, and wherein the amount of acetone ranges from about 30% to less than 100% by weight of the solvent.
- [c42] The method of claim 35, wherein the solvent further comprises water.
- [c43] The method of claim 35, wherein the coating composition is a coatings primer.